Norris (B.)

A PAPER

— ON —

DISLOCATIONS OF THE ASTRAGALUS,

READ BY

BASIL NORRIS, M. D., Surgeon U. S. A.,

BEFORE THE

AMERICAN SURGICAL ASSOCIATION,

CINCINNATI, OHIO, 1883.

WASHINGTON, D. C.:
JUDD & DETWEILER, PRINTERS.
1883.

1733 G st
Washington DC
May 25 83

General C H Crane

Dear General

Herewith I
transmit a copy of N Y State Senate
Resolutions relating to personal services
to the late William H Seward - and
a copy of A Paper on Dislocations of the
Astragalus: for the Library as requested
I am much gratified by your request

Very Respectfully & truly
Paul Norris MD

([illegible])

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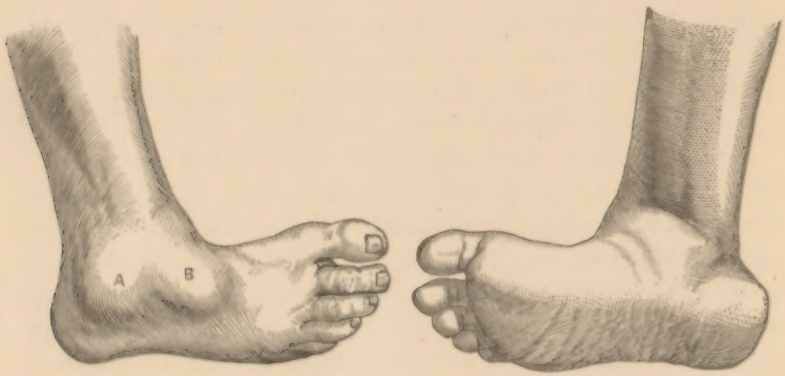
DISLOCATIONS OF THE ASTRAGALUS.

Owing to the infrequency of dislocation of the astragalus, and the remarkably few instances which have been recorded of its successful reduction, the writer ventures to present a narrative of the injury as it occurred to him personally, accompanied by citations from authors, letters from distinguished surgeons, and reports of cases selected from medical journals.

As described by Sir Astley Cooper, the astragalus is connected above and on each side with the tibia and fibula, below it has articulating surfaces for its junction with the os calcis, to which it is united by means of a capsular and strong interosseous band of ligament, and anteriorly it is articulated to the os naviculare by a capsular and internal lateral ligament.



Simple dislocation.

Professor Gross best defines the differential diagnosis of dislocation of the ankle joint and luxations of the astragalus. In the former the astragalus is torn off simply from its connections with the tibia and fibula, in the latter it also loses its relations with the os calcis and scaphoid.

A bony prominence on the dorsum of the foot is the diagnostic sign of dislocation of the astragalus forwards, as it is under the Tendo Achillis the unfailing sign of dislocation backwards.

The dislocation forwards may be complete or partial. When complete it is torn from all its articulations from the tibia and fibula, from the os calcis and scaphoid. When partial the head of the astragalus is separated from the scaphoid and inclines to right or left; or, the anterior ligament of the ankle joint being ruptured, "the superior articular surface of its astragalus may be felt quite subcutaneous some distance in front of the tibia."

According to Mr. Erichsen, in many cases the so-called complete dislocation is not altogether complete, a portion of the bone still intervening between the under surface of the tibia and the upper surface of the os calcis.

The foot in partial dislocations is inclined to the right or left. In its complete form it is turned at right angles to its normal position.

There is reason to believe that partial dislocation of the astragalus sometimes escapes notice. There is hardly a surgeon, we assume, who will not recall a doubtful case of badly sprained ankle, on reading over the cases of partial dislocations of the astragalus to be found among the selected cases herein reported.

An old fashion method of reducing a partial dislocation of the astragalus was related to the writer by a German from the Fatherland. When a boy he severely injured his ankle while running across a fallow field. The joint was extremely painful, as he well remembered, and was treated as a sprain. It grew worse and was much swollen, when by good fortune, a neighbor, and as usual an old woman, advised him to place a brickbat upon the foot, then swinging it back and forth two or three times, to sling the brick as far as possible. By this means the foot was jerked forwards and he was suddenly relieved.

Sir Astley Cooper, in his work on dislocations, says of a

simple dislocation of the astragalus, that it is a most serious accident, being very difficult to reduce, and should the reduction not be effected the patient is ever after doomed to a considerable degree of lameness; and Dr. George W. Norris of Philadelphia, in his Practical Surgery, that the records of our science possess but few cases of luxation of the astragalus not complicated with laceration of the integument. The case of simple dislocation reported in the sixth edition of Hamilton on Fractures and Dislocations has hitherto stood "solitary and alone" in the annals of American surgery. He says, "In September, 1870, I saw with Dr. Sayre, in consultation, a dislocation of the astragalus forwards and outwards, in the person of Mr. Stewart of this city, which had just occurred in consequence of being thrown from a carriage. The dislocation seemed to be nearly complete, causing a great projection and tension of the skin. Under the influence of chloroform, by extension and pressure, it was easily reduced by Dr. Sayre. In five weeks from the time he was able to walk, and soon after the restoration of the functions of the joint was complete."

The case above alluded to as the subject of this paper occurred at seven o'clock on the morning of August 19, 1882.

It happened when driving in my buggy through the Monument Park, in company with a driver, and in consequence of going over an uncovered drain which crosses the road. Coming upon it unexpectedly, the axle of the right fore wheel broke, and the wheel fell off. The horse became frightened, and ran about two hundred yards, when the right hind wheel also fell off, precipitating us both to the ground.

I alighted on my left foot and dislocated the astragalus forwards with a twist outwards.

A party of workmen came to my assistance and placed me in a passing vehicle, by which I was conveyed directly to my home. No time was lost in summoning surgeons, who arrived promptly in carriages which had been dis-

patched for them to prevent delay. Finding ether and an inhaler ready at hand, they proceeded immediately to put me under its influence, and to reduce this dangerous dislocation, which was effected in less than one hour after the accident.

It is with much satisfaction that I am enabled to furnish a report, including the method of procedure and incidents of the operation, from each of the surgeons who conducted the manipulations, as follows:

From Dr. N. S. Lincoln.

WASHINGTON, D. C., *Sept.* 25, 1883.

On my arrival at your bedside, in company with Dr. Ashford, on the morning of the 19th of August, I found that you had a short time before been thrown from your buggy and had suffered thereby a dislocation of the left astragalus. The foot was turned inwards at right angles with its normal position, and a prominence, perceptibly formed by the displaced astragalus, extended over the cuboid bone, posteriorly beneath the outer ankle. The integument was stretched almost to the point of rupture over the beaklike anterior extremity of the astragalus over the external malleolus, and, to a less degree, over the external process of the astragalus. There was a triple dislocation of the astragalus above from the tibia and beneath and anteriorly from the os calcis and scaphoid.

Falling with great violence upon the outer edge of the left foot, that member was bent inwards, the astragalus turning at the astragalo-tibial articulation until the articulating surface of the tibia rested on the inner surface of the astragalus, while the external malleols lay across the trochlear articulating surface of that bone, at the same time the astragalus was forced laterally outwards and forwards so that its head rested upon the cuboid bone, while the body projected beyond the outer border of the os calcis beneath the external malleolus. The internal malleolus was so deeply buried in the inner side of the ankle, in the space from

which the astragalus had been displaced, as to give rise at first to the belief that the malleolus had been fractured.

No attempt at reduction was made until you were believed to be completely under the influence of ether, which was at once administered by Dr. Radcliffe.

Grasping the heel and foot, while Dr. Ashford managed the counter extension, I drew the foot strongly downward, and attempted external rotation without effect.

The parts were absolutely immovable by any force at our command. While continuing our efforts, I perceived evidence of returning consciousness and muscular rigidity, and at once desisted until complete relaxation was effected by further etherization, when a renewal of the manipulations as more fortunate, the tibia resuming its normal position with an audible snap, while the astragalus was forced back into its bed on the os calcis.

The head of the astragalus, however, still remained resting on the cuboid, or rather, partly on that bone, and partly on the external cuneiform. Rather forcible extension of the foot, with pressure upon the neck of the astragalus, readily carried the head of that bone backward and downward into the concavity of the scaphoid, and to our great happiness the reduction of this formidable dislocation was complete.

In my opinion our success was due, first, to the promptness with which the attempt was made, and, secondly, to complete etherization. * * *

From Dr. F. A. Ashford.

WASHINGTON, D. C., *Sept.* 25, 1882.

* * * * * * * *

When Dr. Lincoln and myself arrived, * * we found the left foot dislocated inward and the astragalus luxated forward and slightly outward. The sole of the foot looked directly inward with its inner margin upward and the whole foot somewhat extended. On account of the extreme inward rotation it was supposed from ocular inspection that

the internal malleolus had been fractured, but, upon manual examination, this was found to be intact.

Sulphuric ether was administered, and when narcosis resulted, Dr Lincoln took the foot in one hand back of the heel and the other over the instep and made extension, while I steadied the leg, making such counter-extension as was necessary.

The first effort lasted a minute or two, and then the extension and counter-extension were intermitted, inasmuch as the skin, which was so tightly drawn over the external malleolus and the projecting head of the displaced astragalus, seemed about to tear. For a few minutes, the skin was pressed and smoothed in opposite directions towards the place of greatest tension, and then the extension was resumed by Dr. Lincoln, while with one hand I pressed the skin from above downward toward the ankle and with the other assisted in rotating the foot outward.

As soon as the foot began to move, an outward twist by Dr. Lincoln sent it into its proper position, with the astragalus partly, but not entirely, reduced. This was however easily restored to its place by direct pressure. No laceration of the integument occurred.

* * * * * * * *

Being obliged to leave the city for a week, I was greatly pleased and somewhat surprised, on my return, to find you moving the joint in all directions without pain, except when carried to extremes. There was then very little swelling, and no abnormal heat about the ankle. There was a spot of ecchymosed integument about the size of a nicked five cent piece over where the tension had been greatest, viz., the head of the astragalus, and which attested how narrowly you had escaped sloughing at this point with its attendant evils. Of course there must have been rupture of the three external ligaments, as well as of all ligaments attached to the astragalus, for the amount of displacement seemed incompatible with their integrity.

On the whole, I think you can be congratulated upon an exceptionally good result.

The following letters were received:

From Dr. S. D. Gross.

PHILADELPHIA, PA., *Oct.* 4, 1882.

* * * * * * * *

I have not seen such a case as you refer to in your note of the 1st instant. The accident is an exceedingly rare one, and I warmly congratulate you upon your fortunate recovery.

From Dr. Lewis R. Sayre.

NEW YORK, *Oct.* 4, 1882.

* * * * * * * *

The case of William Stewart, referred to in Hamilton's Work, (page 249,) is the only case of the kind that has occurred in my practice. * * * * *

From Dr. Edward P. Vollum, U. S. A.

FORT HAMILTON, NEW YORK, *Sept.* 11, 1882.

* * * * * * * *

I have had two cases of dislocation of the astragalus, in both of which I was compelled to extract them in pieces. *

They were dislocated forward and inward upon the side of the instep, one was broken at the neck, the other remained entire. The integument in both was unbroken, but greatly stretched. * * *

One of them happened in a gentleman who was thrown from his buggy in Jefferson Co., New York, the other in a carpenter who fell from scaffolding in Utah; both recovered a fair use of the ankle joint and foot. * *

One of them was seen about an hour after the accident, and great efforts were made to replace it under ether without success, with the assistance of a first-class surgeon. The other was seen some twelve hours after the accident. Treatment and result the same. * * *

From Dr. J. W. S. Gouley.

* * * * * *

Your case is very interesting, and of extreme rarity. In twenty-five years of large hospital experience I have never seen a single case of dislocation of the astragalus uncomplicated with fracture of the leg or laceration of the soft parts around the ankle. In fact, I can cite but three cases of luxation of the astragalus. The first case was that of a man who fell not less than fifteen feet below the place he was standing in an unfinished building. He landed upon one foot, the right I think, and the result was fracture of the external malleolus and dislocation of the astragalus forward with rotation of the bone and much injury to the soft parts which perished in a few days. I excised the astragalus which could at no time have been reduced. The patient had a very long convalescence, but eventually made an excellent recovery. I saw him several years after and he was able to walk as well as if nothing had happened.

In the second case I think reduction was successful, though there was laceration of the soft parts with fracture of both malleoli. This patient also made a good recovery after a prolonged convalescence, and is able to walk well. This second case occurred last year. * * *

The third case is still under treatment in my wards. I did not see him when first admitted. My attention was called to his case only three weeks ago. When received into the hospital several months since he was found to have sustained a fracture of the thigh and of both bones of the leg low down and a dislocation of the astragalus, all on the same side. These fractures are now all united, but the astragalus is still out of place, still the patient can walk tolerably well with some varus. * * *

From Dr. D. Hayes Agnew.

PHILADELPHIA.

* * * * * *

In regard to luxations of the astragalus we have had three,

I think, at the Pennsylvania Hospital, if I remember correctly, within the last three years. I have seen two private cases, both of a very remarkable character, in which the bone, as well as could be made out, though not separate from the os calcis, was turned on its axis in such a manner that the lateral surfaces were placed vertically, that is, one presenting to the tibia and the other to the os calcis. These were both irreducible. The others which I mention were all reduced, though I think in one of the three cases the reduction was not complete. * * *

From Dr. J. R. Weist.

RICHMOND, IND., *October* 24, 1882.

I have, in a pretty extensive surgical practice of twenty-five years, never seen a case of dislocation of the astragalus, such cases must be rare.

From Dr. Alfred Post.

NEW YORK, *October* 4, 1882.

* * * * * *

I think that I have seen one or two cases of dislocation of the astragalus, but I have no notes of them, and can give you no particulars. * * *

From Dr. J. W. S. Gouley.

NEW YORK, *November* 13, 1882.

I have just this moment returned from Bellevue Hospital, where I found a case awaiting me, the brief recital of which will probably interest you.

The patient is a young German who "fell from a ladder" upon his left foot and sustained a dislocation of the astragalus forward and outward without fracture, so far as I have been able to ascertain, but the diagnosis of luxation was clear and unmistakable, and was verified by my *interne*, and was made clear afterwards by the reduction which I effected

after putting the patient under ether. I at once bandaged the foot and ankle, and ordered the application of an evaporating lotion over the bandage.

Before I arrived a cast had already been taken, which shows admirably the nature of the deformity. In a few days I shall send you by express one of the models which I shall have multiplied, and shall request that you present it for me to the Army Medical Museum.

The reason why I have been able to get this cast is that my *interne* is very much interested in your case. I read him your letter, and he has been on the look out for such a case ever since, and it turned up sooner than he or I had expected.

Please let me know how you are walking, and how much inflammation ensued from your injury.

If you come to New York within a week or ten days do not fail to come up to 311 Madison avenue before 12 o'clock M., and I shall be glad to take you to the hospital to see the case.

To Dr. J. W. S. Gouley.

WASHINGTON, D. C., *November* 15, 1882.

* * * * * *

Your interesting letter has just come to hand. It is, indeed, remarkable that you should have found at this time one of these rare cases—a simple dislocation of the astragalus.

My own case was attended with a pretty high grade of inflammation for about forty-eight hours, and my surgeons were fearful of erysipelas and sloughing—so they said—but I did not think of such results, for I was elated and happy over the reduction. A side splint and roller bandage put on Saturday at eight A. M. were insufferable at four A. M. on Sunday. I had them cut off and allowed my foot to lie on a pillow, with a cold-water dressing. During the second day the pain increased, and at night was at the highest point; in addition, I had a good deal of muscular pain all over me, but greatest in the back and loins.

Being driven to do something more, I took fifteen grains of quinine on my own account, and Dr. Lincoln prescribed twenty grains of salicylate of soda, both these doses were in full force about an hour afterwards, and from their combined effect I was thrown into a profuse perspiration and completely relieved of pain. The inflammation subsided by resolution, hastened, I have no doubt, by the medicine administered.

I then determined to try to get on my side, and for that purpose placed a thick fold of cotton wadding along the inner side of the leg from the knee to the sole of the foot, and over that laid a straight splint, extending three or four inches beyond the foot. On the outer side I had a hollow splint for the leg and foot, it was selected from the supply of splints on hand, it was also padded with cotton wadding. Both of these splints were tied on with strips of bandage around the leg at intervals, thus dispensing with the roller bandage and securing an open support for the ankle. With this appliance I was able to turn over on my side without having my foot rub against anything, and I could move it about and rest it on the other leg, protected by the projecting end of the inside splint against the danger of striking the foot by extending the leg, awake or asleep.

On the third day I could move my ankle joint a little, and did so, against the advice of my friends, who enjoined absolute rest.

On the fourth day I directed Mr. Marshall, our hospital steward, to bring roller bandages and paste-board, and I superintended the application of a starch bandage as follows: Apply neatly a roller from the toes to a point above the calf, then with both hands besmear the whole bandage, leg and foot, with good flour paste well rubbed in; next another roller and then more paste; over this, on each side of the leg, apply a side splint of binder's-board well starched and cut narrow at the end so as to bend easily and over-lap under the sole of the foot; upon this apply a third roller starched thoroughly, and then finish with a dry roller.

This will dry in about twelve hours well enough to admit of being slit up along the median line, from the toes to the knee, and along the sole of the foot to the heel. A little gentle and dexterous manipulation will enable you to open the splint and to spring it widely enough open to take it off, so that the leg may be exposed to the air, and rubbed to allay the urgent itching which has already called for the splint's removal.

This movable splint may be put on and taken off at will, and ought not to be confined with a roller, but with strips of bandage tied like strings.

With this most satisfactory apparatus I was able to move about my room on crutches in one week; all about the house in two weeks, and at the end of three weeks, out of doors. One month after the accident I was able to take off the starched bandage, and lay aside my crutches for a close fitting stocking, and a Congress gaiter shoe.

(Signed) BASIL NORRIS,
Surgeon, U. S. A.

From Dr. John Brinton.

* * * * * * * *

I am sorry to hear of your accident, but glad to hear of your recovery. I send you a photograph of my case of dislocation of the astragalus.

* * * * * * * *

The case is reported in full in Photographic Review, No. 2, December, 1870, as follows:

"On the morning of October 20, 1868, Mr. L., of South Carolina, aged 75, fell through a trap-door into a cellar about nine feet deep, striking the rounds of a ladder in his fall. He was unable to rise, and was carried up the ladder on the back of a man. A neighboring physician was called in, a dislocation of the ankle pronounced, and reduction under ether attempted. This failing, the limb was tempo-

rarily dressed, and the patient was sent in a carriage to his residence in the country, some ten miles distant.

"At ten P. M., of the same day, I saw Mr. L., in consultation with Dr. Moss, and recognized a complete luxation of the astragalus forwards and inwards. The integument was untorn, but was tensely stretched over the head of this bone and over the inner malleolus, which latter appeared very prominent from the displacement of the astragalus. The foot below the scaphoid and cuboid bones was markedly everted. The fibula was fractured transversely about one inch above the external malleolus. The patient was again etherized, and powerful attempts made to reduce the luxation, but so tightly locked were the bones that no change whatever was effected in the position of the parts. Operative interference being at this time absolutely contra-indicated by Mr. L.'s condition, the limb was placed in a bran-box, and stimulant and opiate remedies administered.

"On the following morning inflammation of an erysipelatous character set in, extending up to the knee. The dorsum of the foot was greatly swollen, and of a dark purple color, but the pulsation of the dorsalis pedis artery remained good. This local condition continued for several days, during which time the patient remained tolerably free from pain and fever, with a good appetite and in good spirits. By the twelfth day after the accident the inflammatory condition of the leg had in great part disappeared; but at this time the constitutional symptoms became threatening, and a slough commenced to form over the head of the astragalus.

"On the fourteenth day, in consultation with Drs. Moss and Lynah, I excised the astragalus by a longitudinal incision. The removal of the bone was accomplished without difficulty, its ligamentous connections having been in great part severed by the violence of the accident. The tendons of the tibialis posticus and flexor longus pollicis muscles were ruptured and in a sloughing condition.

"The patient after the operation did remarkably well, thanks to the unwearied solicitude of his attending physician, Dr. Moss, his own unflinching courage and determina-

tion, and the care with which he was nursed. The limb was placed in a swinging bran-box, the open joint was largely injected with solutions of permanganate of potash and of carbolic acid, and the free exit of all discharges was carefully provided for. At the expiration of twenty-five days from the operation all of the exposed cartilages had softened and had been taken away, and healthy granulating surfaces were established. A little later the superficies of the posterior part of the os calcis became carious and was removed. During February, 1869, the discharge from the ankle joint gradually diminished in quantity; at the same time rapid cicatrization took place. A splint formed of bandages saturated with a solution of silicate of soda was now applied, but so great was the congestion of the limb when bandaged, or when placed in the dependent position, that the splint could not be tolerated, and was therefore dispensed with. This tendency towards swelling and discoloration decreased with time, cold applications, and friction, but no sustaining apparatus to the limb was ever used.

"In April, 1869, Mr. L. began to walk on crutches, but these were soon exchanged for a walking-stick. At present (November, 1870) the wound is solidly closed, the heel is elevated about one inch and three-fourths, and the foot presents the peculiar double curve exhibited in the photograph. A slight degree of motion exists at the ankle-joint, and the extremity, although shortened, is firm and capable of sustaining the weight of the body without pain. He now walks comfortably with the aid of his cane alone, and wearing a high-heeled shoe without metallic supports. As evidence of the power yet remaining in the ankle, I may state that, unassisted and without either crutch or stick, Mr. L. mounted to the third story of the gallery in which the accompanying photograph was taken.

"*Remarks.*

"In examining the recorded cases of complete simple luxation of the astragalus, I have been struck with the different

opinions entertained as to the proper treatment of the accident.

"Most surgeons agree as to the propriety of an attempt at reduction, although from this opinion Nelaton dissents, on the ground that in this injury the attachments of the astragalus are destroyed to such an extent as to involve the life of the bone. Dr. Gross advises immediate excision; Dr. Norris, primary excision, if reduction be impracticable. Mr. Eriehsen recommends the attempt at reduction, accompanied, if necessary, by section of the Tendo-Achillis: if reduction be impossible, then a secondary incision which, in his opinion, is safer than the primary operation. Streubel, who has laboriously examined the literature of this injury, favors first an attempt at reduction; if that be unsuccessful, then an expectant treatment, to be followed if necessary, by secondary excision. Such, too, are the conclusions of Turner and of Broca.

"In the judgment of the writer all attempts at reduction should be made with as little violence as possible, and should be of short duration: a secondary resection, moreover, would seem to be less dangerous than a primary one, and should be preferred. The following statistics are pertinent to this subject: Streubel reports fifty-seven cases of primary excision of astragalus, with forty-one recoveries, and twenty-five secondary excisions, with one death. Hyfelder gives sixty-seven exsections, with nine deaths. Mr. Hancock collects twelve cases of excision performed by British surgeons for complete simple dislocation of astragalus, with nine good recoveries and three deaths; and twenty cases by foreign surgeons with fourteen recoveries, three deaths, and three doubtful results. The greater rate of mortality in all the statistics accompanies the primary excisions."

Two instructive cases of reduction of partial dislocation of the astragalus forwards, of long standing, are reported by Mr. George Brown—read before the Clinical Society of London, February 11, 1876—as follows:

"Dislocations of the astragalus are, I believe, among the rarer forms of surgical accidents, and are generally most difficult to treat. I have had an opportunity of seeing only two cases of this kind of injury; one the case which I wish to bring before your notice this evening, the other that of a girl about twelve years of age, who was an in-patient of Charing Cross Hospital, when I was House Surgeon to that Institution two and a half years ago. In this latter case the anterior ligament of the ankle joint was ruptured, the astragalus was dislocated forwards, and its superior articular surface could be felt quite subcutaneous, some distance in front of the tibia. The patient did not apply to the hospital for some days after the receipt of the injury, being under the impression that it was only a bad sprain. There was but little difficulty in reducing the dislocation, but at first it was almost impossible to keep the bone in position, as it was found that whenever the bandages were re-adjusted the bone had again slipped forwards. However, we were, after a time, more successful in fixing the bone, and at the end of eleven weeks the patient was discharged from the hospital cured, but she found it necessary to wear a special boot with iron supports for six months afterwards.

"In the present case no difficulty was experienced in keeping the bone in position, and the result was that the patient recovered the perfect use of the foot and ankle-joint in less than two months.

"The patient, Clara P., *ad.* 16 accidentally slipped down a step about two weeks before Easter, 1874, and twisted her left foot. Previous to this she had nothing the matter with either of her feet or ankle joints except that she was naturally flat-footed. The foot was very painful after the accident, but, as it was thought to be nothing more than a sprain, no medical advice was sought. On Easter Monday she took a long walk, after which she suffered great pain of the foot, and there was, the mother states, a decided swelling on its inner side. Next day a surgeon was consulted, who said that there was nothing the matter with the foot beyond weakness of the ankle-joint, due to constitutional causes,

and that its misshapen condition was a consequence of her being flat-footed. He prescribed rest and strengthening medicines, and said that little improvement could be expected for some time. It should be stated that the gentleman consulted did not examine the sound foot or compare it with the other. Several months elapsed, but the foot gradually grew worse, the deformity became more marked, and the difficulty of walking greater. Towards the end of the year she was scarcely able to walk without assistance. Generally she leant on another person's arm when she walked out, but she spent the greater portion of her time either sitting or lying down, as the foot pained her very much after standing or walking. Often the pain was so great that she was unable to sleep at night.

"Early in January, 1875, * * * the mother requested me to examine her daughter's foot and advise as to treatment, as she feared that she would become a permanent cripple.

"On comparing the two feet it was at once apparent that there was displacement of the astragalus forwards and inwards. The hollow which should exist between the internal malleolus and the scaphoid tubercle was entirely obliterated. This was due to the head of the astragalus slipping forwards and inwards, which at this point was much more prominent than either of the two bony processes before mentioned. Over this projection the skin was tightly stretched. In front of the ankle joint and on its outer side, where the head of the astragalus should be felt, there was a considerable depression. The tendon of the extensor proprius pollicis and long extensor tendons of the toes were much contracted, and the outer side of the foot was drawn upwards. On asking the patient to walk across the room I found that she was unable to place the outer side of the foot to the ground, and that the whole weight of the body, in walking, was borne on its inner side. There was almost entire loss of power of extension and flexion of the foot.

"When I had given my opinion as to the nature of the case, the mother thanked me and said that she would at

once take her daughter to Mr. ———, mentioning the name of a "bone-setter," and appeared to be surprised when I told her that the treatment of such cases came within the province of a surgeon. However, I obtained her consent to do whatever I thought necessary.

"Having placed the patient in the supine position, I requested the mother to hold the leg firmly whilst I attempted to restore the bone to its proper position. I then grasped the foot near the toes with the right hand, and forcibly extended it as much as possible, at the same time pressing with the left hand on the projecting head of the astragalus. In a minute the bone slipped into its natural position with a distinct snap, and its head could be both seen and felt projecting on the outer side, quite filling up the depression which previously existed. The two feet were now, to all appearances, perfectly symmetrical. Having no splint at hand, I was unable to do more than apply a pad and bandage around the foot. On calling next day (January 10,) I found that the astragalus had again slipped out of position during the night, and the foot presented the same appearance as before. This time reduction was effected very rapidly. I then applied a well padded side-splint with foot piece to the inner side of the leg, and kept the patient at rest. * * * At the end of eleven weeks I dispensed with the splint, and permitted the patient to take a little exercise. For some time she could not walk without assistance, but she can now—just thirteen months after reduction was effected—walk long distances without giving rise to pain. * * * She has the perfect use of the joint, and the feet are as nearly as possible symmetrical.

"The exact nature of the case is, I think, pretty clear from its history. There is no doubt that when the patient twisted her foot, a little before Easter, 1871, some fibres of the internal lateral ligament of the ankle-joint as well as those of the calcaneo-scaphoid ligament, which so largely assists in keeping the head of the astragalus in position, were ruptured. At first the displacement was very slight, but having lost its chief internal support, the head of the bone was

gradually forced forwards and inwards by the weight of the body until the deformity became very marked, and the ankle-joint almost useless.

"In the early history of the case it would have required very careful examination and comparison with the sound foot in order to detect the exact nature of the injury, but when I saw her nine months after the original injury, its true character was obvious at a glance."

A successful case is reported as having been reduced by a new method by M. Th. Anger, in the "Bulletin et Memoires de la Société de Chirurgie de Paris," October 6, 1874, as follows: "After having ascertained that the case was one of complete luxation, forwards and outwards, a luxation often irreducible, I did not think it worth while to renew the attempts made by the *internes*, I thought immediately of trying my method. The patient being stretched out horizontally in his bed, I passed under his thigh a sheet folded in the form of a cravat and tied the ends firmly to the crossbars at the head of the bed as the means of counter-extension. In order to fix my extending bands of rubber on the foot I cut long strips of cerecloth (saradrap,) which were applied by figure of eight turns over the heel and ball of the foot, all turns crossing under the sole of the foot. At the crossing of the turns under the arch of the foot I fixed strong bands of rubber and tied them to a rod at the foot of the bed. The tension of these bands was not determined, but was estimated to approximate a force of 15 or 20 kilograms. Under the effort of this moderate traction the foot, which was strongly adducted, yielded gradually. At the end of from ten to twelve minutes perceiving that muscular resistance was exhausted, I placed myself on the outer side of the member, then seizing with one hand the inferior extremity of the leg, and with the other the sole of the foot, I put my knee against the astragalus, which, under a moderate force, returned suddenly into its place with an audible snap."

A case of reduction of a dislocation of the astragalus forwards and inwards of five months' standing is reported in the "Australian Medical Journal" of 1879, by Mr. T. N. Fitzgerald: "On the 30th of September, 1878, the patient having been brought under the influence of chloroform, the Tendo Achillis was first cut, then finding the tendon of the tibialis anticus tense it was also divided. A long tenotome was now obliquely slid from about an inch in front of and below the internal malleolus into the ankle joint, all the attachments between the astragalus and tibia were freely divided, including some unbroken fibres of its annular ligament. The knife was now carefully withdrawn and reinserted just over the front of the internal cuneiform bone and pushed obliquely backwards and made to divide freely all the attachments between the scaphoid and bulging head of the astragalus, the blade being then carefully withdrawn so as not to allow the entrance of the air into the large cavity thus formed. Extension was now made with the foot in the extremely extended position and firm pressure backwards on the head of the astragalus. Suddenly the foot forcibly flexed on the leg and we had the satisfaction of finding the astragalus slip into its normal position. The limb was carefully bandaged to the knee and the foot placed at right angles to the leg.

"On the 18th of January plaster of Paris bandages were applied from toes to knee.

"On the 4th of February the patient walked pretty well on the injured foot.

"March 26th, movements of ankle joint pretty free, could walk moderately well."

Case recorded by Dr. James A. Grant, in the Canada Medical Journal, October, 1865.

"J. M., aged 35, a robust farmer, while driving a cart, June 24, 1864, in consequence of his horse taking fright, was thrown out with violence and dragged for some distance, his foot catching in the wheel as he fell. He attempted to

walk, but was unable, observing that he trod on the outside of the foot, at the same time the suffering was very great. The boot being removed, the following appearances were to be observed. The foot inverted so that the sole looked inwards, Tendo Achillis not tense, the astragalus was driven forwards entirely out of its place, where it took a transverse position, and the anterior extremity protruded fully an inch through the integument on the outer side of the foot. On the upper part of the tarsus the skin was stretched tightly over the displaced astragalus. There was no fracture of either the tibia or fibula. There was very little surrounding effusion, so that the outline of the various parts could be well defined. The dislocated bone was thus wrenched from all of its connections, and thrown transversely across the tarsus. An unsuccessful attempt was made to reduce the dislocation, by extension and pressure. The limb was placed quietly on the bed, and by moderate pressure the bone turned and shot into its place quite unexpectedly. An outside splint was forthwith placed on the leg, and a cold lotion applied over the ankle. An opiate was given at bedtime, and the following day he entered the General Protestant Hospital. The cold water cloths were constantly applied until the 8th day after the accident, and then a purulent discharge from the joint having been observed, a linseed poultice was substituted. The discharge continued more or less until the end of August, at which time the wound closed perfectly. The limb continued in a weak state until March, 1865; he was then able to throw aside the sticks and use the limb with considerable freedom. From this date the parts gained strength, and at present he walks about as well as ever, and performs the various duties of farm life, the limb having regained perfect motion, the parts surrounding the displaced bone resembling in every respect those of a healthy joint."

From Proceedings of New York Senate, March 23, 1883.

Mr. H. A. Nelson offered the following:

Whereas, On the night of April 14, 1865, memorable as the occasion when Mr. Lincoln, the President of the United States, was assassinated, and the Honorable William H. Seward, Secretary of State of the United States, also "fell under the blows of an assassin;" and

Whereas, He was thereafter treated with special skill and tender care by an army surgeon, whose services are acknowledged in a letter written by Mr. Seward himself, and bearing date Auburn, July 14, 1870, in the words following:

"AUBURN, *July* 14, 1870.

"Dr. BASIL NORRIS, *Surgeon U. S. A.*

"MY DEAR SIR: I cannot doubt that I have long since made you understand, in our pleasant social intercourse, how highly I appreciate the surgical skill and care with which you treated me in the year 1865 when I fell under the blows of an assassin, inflicted while I was lying helpless in my bed in my own house at Washington. A season of rest, however, which I long desired and needed, has come to me at last, and I am improving it as well as I can by performing personal, domestic, and social duties which were neglected when I was engaged in the public service. It seems to me to be an important duty of this kind to record, in a manner that may be lasting, my acknowledgments of the appreciation which I have mentioned of the gratitude I owe you as a savior of my life, of my profound respect and of my sincere and affectionate esteem.

"WILLIAM H. SEWARD."

And whereas, The said Basil Norris individually performed the surgical treatment required by bleeding wounds recently inflicted, and remained with his patient at a time when consternation and excitement pervaded the city; and

Whereas, The said Basil Norris continued daily to bestow his personal attendance during a long period of illness and until convalescence was attained; and

Whereas, The said letter of Mr. Seward leaves no doubt of his purpose to record his appreciation of the skill and care with which he was treated, and of his respect and esteem for Dr. Norris; and

Whereas, Such services rendered on such an occasion in such manner to a citizen of this State, and an eminent public officer, deserves especial recognition from the representatives of the people of this State; therefore be it

Resolved, That the letter of William H. Seward to Dr. Basil Norris, a surgeon in the United States Army, dated July 14, 1870, be published in the proceedings of this body; and be it further

Resolved, That, for the faithful, zealous, and patriotic discharge of his extra-official duties toward the Honorable William H. Seward in his distress, we esteem Dr. Basil Norris well deserving this public commendation.

The President put the question whether the Senate would agree to said resolution, and it was decided in the affirmative.